

**Figure 2.3-10. White Sands Test Facility**

## WSMR Launch Complex 39

The WSMR LC-39 site is a cleared area used for launching missiles off mobile launch equipment. It is part of the Nike Avenue launch complexes. The only facility on the site is a berm. Power and a liquid petroleum gas tank are available at the site. (WSMR 1996-B)

## WSSH

WSSH is an airfield and operations complex built on a dry gypsum lakebed near the Columbia site used for DC-X and Clipper Graham testing. The airfield is used by the Army as a recovery landing site for battle-damaged drone aircraft. NASA uses WSSH for Space Shuttle pilot training and as an alternate Space Shuttle landing site. It is located north of U.S. Highway 70 within WSMR boundaries, about 88 km (55 mi) northeast of WSTF and about 4 km (2.5 mi) east of the San Andreas Mountains. (WSMR 1994). It is near existing roads, power, and communication systems. (WSMR 1996-A)

### **2.3.3.3 ER**

The ER (Figure 2.3-11) consists of the USAF's CCAS, Patrick Air Force Base (PAFB), several downrange tracking stations, and NASA KSC. The USAF 45th Space Wing (45 SW) manages the ER, which extends over 16,000 km (10,000 mi) from the Florida mainland through the South Atlantic into the Indian Ocean. One of the tracking stations, Antigua Air Station, is 2,000 km (1,250 mi) south of CCAS, while Ascension Auxiliary Air Field is nearly 8,000 km (5,000 mi) downrange. Users of the range include: USAF, U.S. Army, USN, NASA, foreign governments, European Space Agency, and various private industry space launch contractors. NASA's Space Shuttle Program, USN's Trident II submarine-launched ballistic missile, and private industry space launch contractors are all supported by the ER. During launch, ER customers rely on 45 SW personnel for tracking, communications, optics, weather forecast, and telemetry, all of which provide critical flight data. The central computer complex processes information and passes data to launch agency personnel, 45 SW Range Safety directorate, and 45th Weather Squadron. The 45 SW also processes and launches DOD satellites on Delta II, Atlas II, and Titan IV expendable launch vehicles. (USAF 1996)

CCAS is located on 6,900 ha (17,200 ac) on a barrier island on the east coast of Central Florida. It was selected in 1947 as the site for a United States Missile Testing Range. Throughout its history, CCAS has been instrumental in establishing of numerous guided missile weapons systems, the Man in Space Program, and various DOD and commercial satellite programs. The first missile, a German V-2 rocket with an Army WAC Corporal second stage, was launched July 24, 1950. During the next 3 years, facilities were constructed for testing of Matador, Snark, and Bomarc missiles. The first launch of the Saturn I space vehicle took place in 1961. In 1962 CCAS was selected to support the Titan III Program, with its first launch in 1965. Other programs conducted at CCAS include: Jupiter-C, Thor, USN Polaris, and USAF Atlas ballistic programs; and Pershing, Delta, Poseidon, Minuteman, and Trident programs. CCAS is currently lead range for SDIO in-orbit testing. A total of 36 launch complexes exist; seven of which are currently active. CCAS is located in Brevard County, approximately 250 km (155 mi) south of Jacksonville and 300 km (210 mi) north of Miami. The station is bordered on the east by the Atlantic Ocean, on the west by the

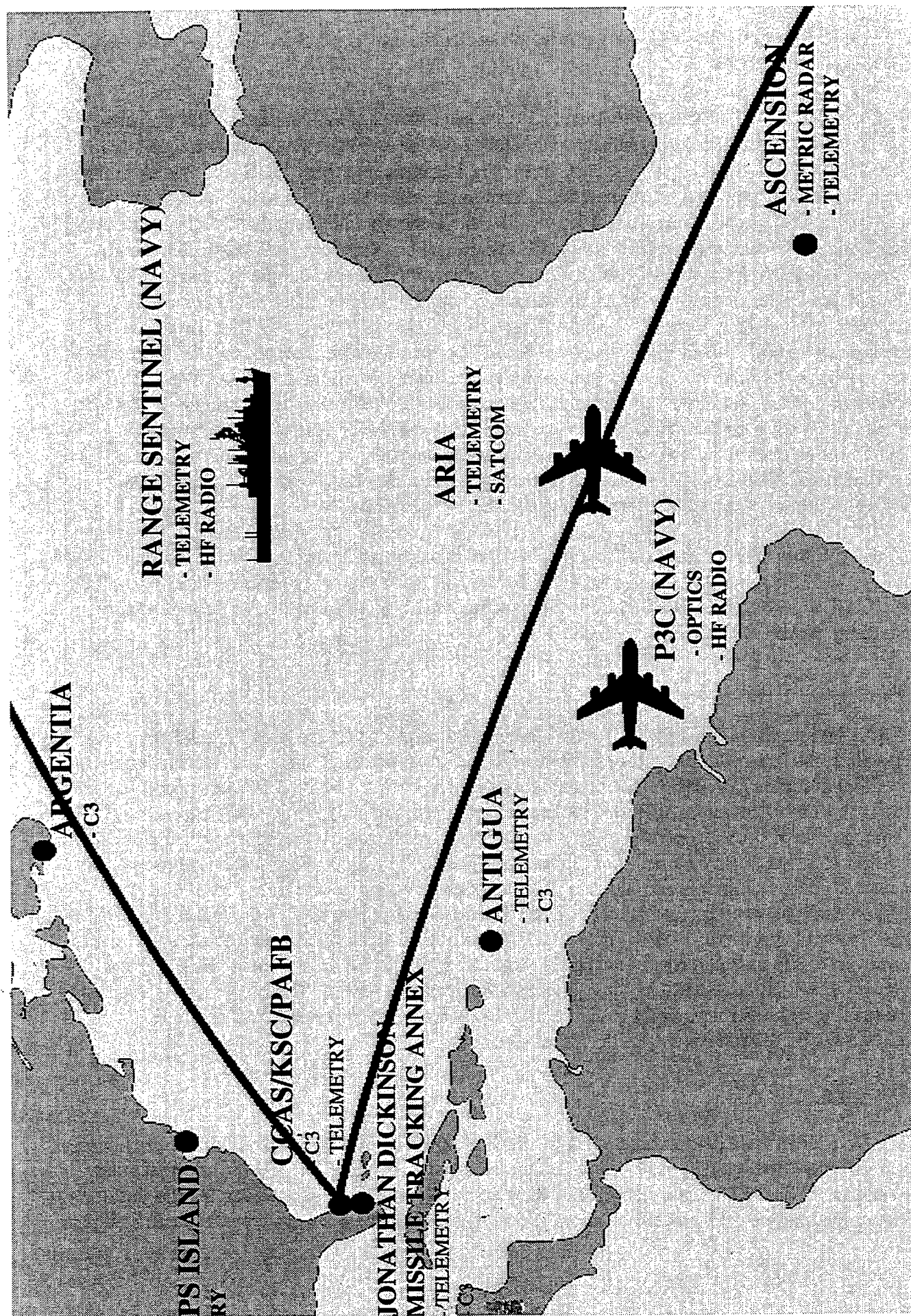


Figure 2.3-11. Eastern Range

Banana River, on the south by Port Canaveral, and on the north by KSC. (CCAS 1994-C, CCAS 1994-D, USAF 1996)

KSC (Figure 2.3-12) owns approximately 56,500 ha (140,000 ac) of land and water property and maintains operational control over approximately 2,600 ha (6,500 ac). As the principal site for launches of NASA space systems, KSC processes, launches, and lands the Space Shuttle and its payloads, and is preparing to support the International Space Station. Two active launch pads are located on KSC. KSC's responsibilities include: the assembly, integration, checkout, and preflight preparation of space vehicles and their payloads; design, development, validation, activation, operation, and maintenance of ground support equipment (GSE) and supporting hardware; tracking and data acquisition; launch operations for reusable manned Space Shuttle vehicles; recovery and refurbishment of the Space Shuttle Solid Rocket Boosters (SRB's); landing operations and refurbishment of the Space Shuttle Orbiter; logistics support for flight operations; and design, construction, operation, and maintenance of launch and industrial facilities. KSC's responsibilities also extend to facilities and ground operations at designated contingency landing sites. Its location on the east coast of Florida is well suited for its mission by allowing initial launch trajectories to be over open ocean away from populated land areas. KSC is situated approximately 240 km (150 mi) south of Jacksonville and 64 km (40 mi) due east of Orlando on the north end of Merritt Island adjacent to CCAS. (KSC 1994)

At the ER, two takeoff sites, two landing sites, and two processing facilities are being considered for the X-33 Program: SLC-37, the Skid Strip, and the Solid Motor Assembly Building (SMAB) at CCAS; and KSC LC-39A/B, the Shuttle Landing Facility (SLF), and the Vehicle Assembly Building (VAB) at KSC (Figure 2.3-11).

#### SLC-37 at CCAS

SLC-37 was built in 1962 for the Saturn I Missile Program. It was the site of eight Saturn I and IB launches, including the launch of Apollo 5, with the first flight of an unmanned Apollo lunar module on January 22, 1968. The complex consisted of Pads A and B, each containing a launch stand and umbilical tower. Original structures common to the pads included the blockhouse (launch control center), operations support building, propellant storage and transfer facilities, two utility buildings, sentry house, sewage treatment plant (STP), sewage lift station, sewage pump house, electric substation, and a mobile self-propelled service structure riding on 366 m (1,200 ft) of steel rails between the two launch stands. The service structure was 91 m (300 ft) high and could extend to a distance of 101 m (330 ft). Much of the complex, including the service tower, has been dismantled and removed. The blockhouse, which contained the main firing and test supervision facilities, is still in place, although the interior is empty. The blockhouse measures 34 m (110 ft) in diameter by 11 m (37 ft) high and is constructed of reinforced concrete. (CCAS 1991, SFA 1995)

#### Skid Strip at CCAS

The Skid Strip is a 3,048 m long by 91 m wide (10,000 ft by 300 ft) northwest/southeast concrete runway provided with 23 m (75 ft) wide shoulders and 137 by 305 m (450 by 1,000 ft) grassy overruns. Overrun areas are stabilized. There are no return taxi lanes; however, a large cargo unloading/staging apron (4,253 sq m (45,776 sq ft)) and control tower have been constructed near

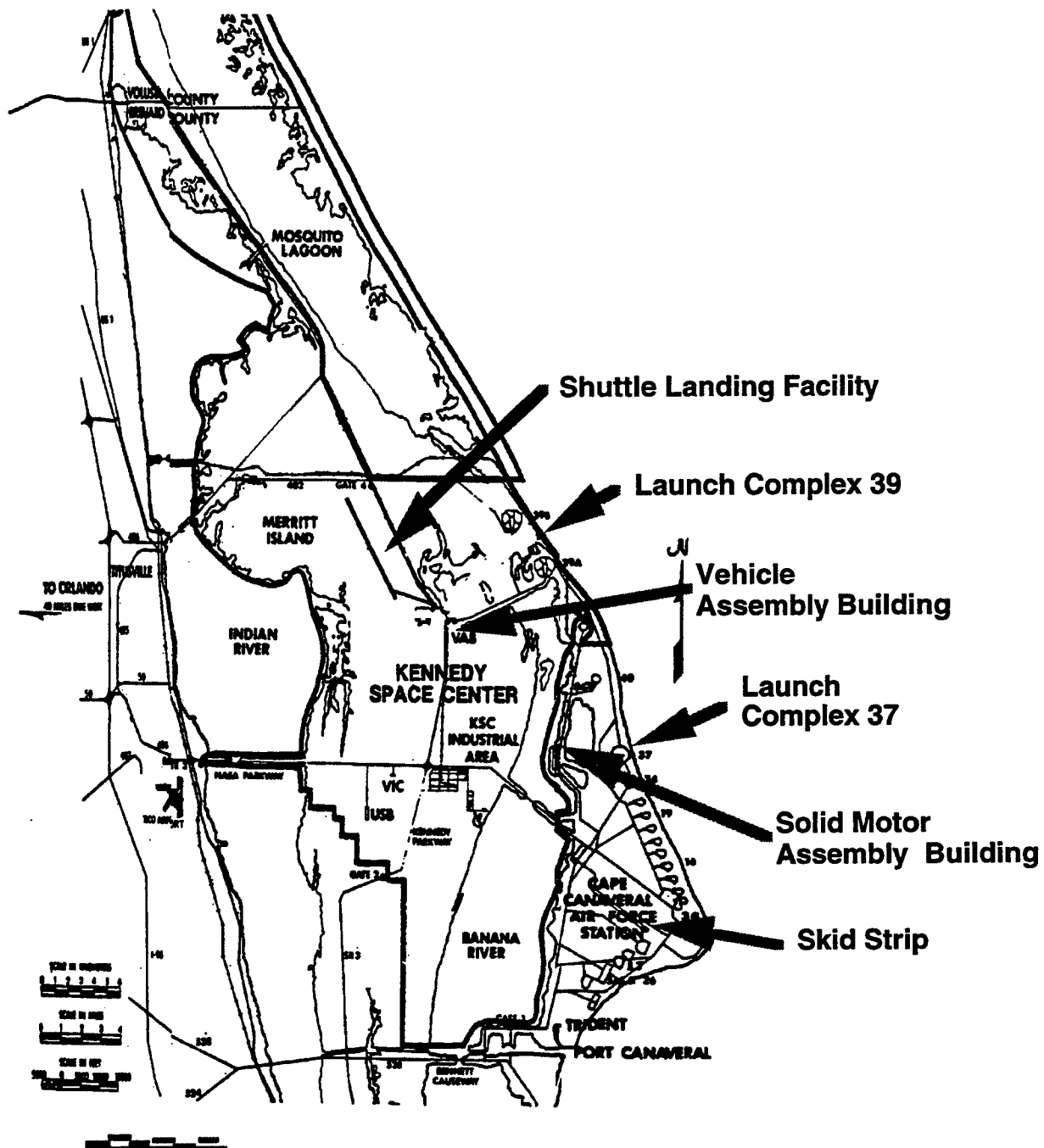


Figure 2.3-12. Eastern Range Area Map